# Defining the Differences Between the CPR, EMR, and EHR

Save to myBoK

*by Donald T. Mon, PhD*

As healthcare professionals have attempted to gain a better understanding of the electronic health record (EHR) over the last year, it is natural for them to compare and contrast past experiences with electronic records against the now-published Health Level 7 (HL7) EHR draft standard. Interestingly, discussions on the definition of the EHR always seem to start with the same question: How is the EHR different from the computer-based patient record (CPR) and the electronic medical record (EMR)?

The CPR, EMR, and EHR were all generated from the same vision more than 30 years ago. So it is not unusual that questions about their similarities and differences abound. However, sufficient differences among them are more apparent now than even just a few years ago, reflecting the evolution of the concept. The objective of this article is to highlight some further distinctions between them, based on insights gained from the industry's experience with the development of the EHR draft standard over the past year.

## A Historical Perspective Provides a Useful Framework

As described by the Institute of Medicine, an electronic record would:

- Collect clinical, administrative, and financial data at the point of care. When combined with alerts and evidence, this integrated view of patient data would help clinicians make better decisions.
- Exchange data more easily between providers to facilitate continuity of care
- Measure clinical process improvement and outcomes, compare them against benchmarks, and facilitate clinical trials and research
- Report health data to public health, regulatory agencies, and accreditation bodies to more quickly detect and monitor disease outbreaks, measure population health status, and assist with bioterrorism surveillance
- Support enterprise-wide management reporting and other administrative and financial (e.g., revenue cycle management) processes

The obvious goals are to improve the quality of patient care, reduce medical errors, increase operational efficiency, and reduce costs.

However, significant obstacles exist, including the high cost to purchase, implement, and maintain electronic record systems; limitations in technology; organizational and behavior change; the lack of alignment within the industry to exchange health information; and the lack of incentives to align the industry. These obstacles have prevented the vision from being implemented all at one time and have hindered the rate of adoption of electronic record systems. Thus, there is a natural evolution of both the vision as well as electronic record products, resulting in the respective eras of the CPR, the EMR, and now the EHR.

## What's in a Name?

### CPR

"Computerized medical records" was a common term used in the 1970s and early 1980s to describe the products of that era. In the mid-80s, "computer-based patient record" (CPR) became the prevailing term. Due to the high cost of development, early CPRs focused on essential functions, such as alerts, medication administration, orders communication, and notes, with data integrated from registration and admitting, financial, laboratory, radiology, pharmacy, nursing, and respiratory therapy systems.

Document scanning was not as mature in the 1970s and early 1980s as it was in the late 1980s and 1990s. Thus, the record for the most part was represented as integrated data in an underlying database called the clinical data repository (CDR). It was

thought that the CDR would (1) support both concurrent decision making (i.e., when the clinician is providing hands-on care) and retrospective decision making (e.g., management reporting, outcome studies) and (2) serve as the longitudinal record for an individual.

Though early studies show that CPRs were implemented in a variety of settings—physician offices and group practices, single hospitals or academic medical centers, large multihospital systems (e.g., the VA and DoD), and even within health plans—the major growth of CPRs was in the inpatient acute area. Thus, the focus on exchanging health information was within the inpatient facility. Except for best practices, there were few instances where health information was exchanged seamlessly from the CPR to quality reporting agencies.

## EMR

By the mid-1990s, CPR products had been enhanced. By then dictation and transcription were integrated into EMR products, and all of the previous functions became more sophisticated, too. At this juncture, products began to differentiate themselves based on cost, technology, and philosophy. Some products retained the notion of the CDR and built templates that allowed discrete data to be entered as structured documentation. As document imaging matured, other products combined discrete data with scanned images of the largely text portions (e.g., notes) of the record. Still others used document imaging much more expansively, where much, if not all, of the record consisted of scanned images.

The more costly systems that stored discrete data could extract such data from the CDR and repurpose it for quality and management reporting and quantitative research. The notion that the CDR could support both concurrent and retrospective decision making was modified. It was clear that the CDR could support concurrent decision making, but that retrospective decision making may have been better handled by a separate database built either into the EMR system itself or outside of the product (e.g., a data warehouse or data mart).

Systems that relied largely on document imaging were less expensive. However, since the record consisted of images, there was no means of extracting data that could be repurposed other than through character recognition or reviewing the image and then entering the data into a file. If data reporting and research was less of a priority, though, then document imaging was not an issue. Systems based on document imaging provided clear value to the provider. In addition to being less costly, they allowed clinicians to access and review the entire record and eased the burden of maintaining records, to name a few of the benefits.

The terms "CPR" and "EMR" were used interchangeably for any of these product directions, adding to the confusion. However, it mattered less how these products were labeled than what functionality they provided or how they were deployed. In the EMR era, ambulatory electronic record systems began to proliferate. Within the inpatient setting, electronic record systems were increasingly deployed across multiple facilities within an enterprise. However, there was still little exchange of health information between the physician office and inpatient acute electronic records systems, and just as few instances of seamless reporting to public health and other regulatory or accreditation agencies.

## EHR

There is just as much eagerness now to label products EHRs as there was over CPR. However, there are wider differences in functionality between the EHR and the EMR—at least how the HL7 EHR draft standard construes it. Yes, the EHR still contains the essential features of past CPR and EMR systems, such as alerts, medication administration, and orders communication. However, the standard calls for functionality go well beyond what average EMR products deliver today, including fully integrated evidence-based medicine; seamless health information exchange between providers across the entire continuum of care; reporting diagnoses as a near real-time transaction to public health; and embedded clinical terminology to assist with documentation.

The EHR's ability to exchange health information across a network and facilitate quantitative analysis (e.g., outcomes studies, population health) puts a clear emphasis on data. Thus, database technology will prove to be extremely valuable. Document imaging may still play a valuable but reduced role in the EHR.

Further, the concept of the longitudinal record is quite different than the way it was conceived in the CPR. In the CPR, it was thought that the CDR could serve as the longitudinal record. But that sufficed only for the longitudinal care given by that provider. In the EHR paradigm, longitudinal care is that which the person has received by various providers over many care settings in a lifetime. Thus, a person's longitudinal record will be distributed in as many EHR systems as the enterprises in

which he or she has received care. This implies that there will be a greater proliferation of EHRs beyond the inpatient acute and ambulatory care settings in the future (e.g., nursing homes, home health, rehabilitation, assisted living).

How will we know which products today can be correctly classified as EHRs? Unlike its CPR and EMR predecessors, the EHR has a draft standard against which products can be compared. In addition, as called for by the national coordinator for healthcare information technology, products that meet the minimum functional requirements will be certified as EHRs. Thus, the EHR designation for certified products will be unmistakable.

Obviously, the EHR represents the latest evolution aiming to fulfill the vision set more than 30 years ago. There are discernible differences between the EHR, the CPR, and the EMR. With an EHR standard and product certification, there will be greater clarity, at least, in what can be considered an EHR.

## References

Brailer, David, and Tommy Thompson. "The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care." Available online at http://www.hsrnet.net/nhii/materials/strategic_framework.pdf.

Connecting for Health. "Achieving Electronic Connectivity in Healthcare: A Preliminary Roadmap from the Nation's Public and Private-Sector Healthcare Leaders." Available online at www.connectingforhealth.org/resources/cfh_aech_roadmap_072004.pdf.

***Don Mon** (don.mon@ahima.org) is AHIMA's vice president of practice leadership.*

**Article citation**:
Mon, Donald T. "Defining the Differences between the CPR, EMR, and EHR." *Journal of AHIMA* 75, no.9 (October 2004): 74-75,77.

Driving the Power of Knowledge